

Moving Munitions

EOD steps up to the task using new robotic platform

by Capt Todd Graves
31st CES

The 31st Civil Engineer Squadron Explosive Ordnance Disposal Flight, Aviano Air Base, Italy, and the U.S. Air Forces in Europe Construction and Training Squadron (CTS), Ramstein AB, Germany, performed a little magic last summer with the help of some battle-proven technology.

The 31st Munitions Squadron (MUNS) at Camp Darby, Italy, had been experiencing structural problems with the ceilings in eight munitions storage structures (aboveground magazines or igloos) that contained high-explosive missiles, rocket warheads, projectiles and fuzes. The 22-year old facilities' structural problems had been progressing for years. Engineering studies were done in 1981 and again in 1995.

In the mid-1980s, a steel mesh was anchored into the ceiling and a coat of shockcrete (a type of concrete) sprayed into the mesh. But by last May, the weight of the coating had finally caused large pieces of the shockcrete, mesh and some of the original ceiling to separate in one of the igloos.

The 31st MUNS called in the U.S. Army Corps of Engineers to perform an engineering evaluation on all eight igloos. The results raised serious concerns regarding the structural integrity of the facilities. As a result, the 31st MUNS disconnected power to the facilities and prohibited access to the eight igloos — including the stacked-to-the-ceiling munitions still stored there.

The 31st MUNS, working through the HQ USAFE staff, coordinated with the USAFE Civil Engineer to use EOD's latest robotic acquisition, the All-purpose Remote Transport System, known as ARTS, to move the munitions out of the igloos. SSgt Rusty Mills and SSgt Walter Moss from the 31st CES EOD Flight accomplished an initial site survey and determined the operation was feasible.

The only ARTS in command were at Ramstein's CTS site. TSgt Robert Hannan, a CTS EOD member, arranged to transport an ARTS to Aviano. As the command technical expert on the system, he accompanied the ARTS to provide additional training to the Aviano EOD team and to offer expertise and advice for the Camp Darby operation. The team spent one day training on the ARTS, then loaded it on a flatbed for the trip to Camp Darby.

Sergeant Hannan and the 31st CES EOD team (SSgt Benny Beach, Sergeant Mills and SrA Lenny Eckstein) traveled to Camp Darby on August 9. For two days, they worked with safety personnel and the 31st MUNS to coordinate the removal plan and perform an operational risk management review. They collectively developed a mission-oriented, prioritized munitions removal plan. With their task laid out for them, it was time to get to work.

The EOD team downloaded the ARTS and confirmed it was operational, then each team member practiced lifting and moving munitions pallets. This type of operation was different from the normal EOD mission and use of the ARTS, but the team had little difficulty mastering the necessary movements for "munitions storage and re-warehousing."

Once everyone was comfortable with the system, the team moved to the igloos. The goal of the first afternoon was to orient the team to the spaces in the igloos and to how the ARTS needed to be maneuvered to properly move items.

The team also used the Mk 3 Remote Ordnance Neutralization System (RONS) robot for additional monitoring capability. Because of the tight spaces in the igloos, the extra "eyes" of the RONS ensured big brother ARTS did not contact any munitions while trying to remove items. The RONS was also used to move small boxes from within the tight spaces that the ARTS could not maneuver to.

The team fine-tuned their procedures as the operation progressed. One member controlled the ARTS while another monitored with the RONS. Another teammate ensured each system had sufficient cable, while keeping track of each so that no cables were run over, possibly tearing them. The last team member was assigned as safety observer to oversee and ensure the overall safety of the entire operation.

As the EOD robots brought the munitions out of the igloos, 31st MUNS personnel transported them to another storage area. The team methodically proceeded from facility to facility for 12 days, removing more than 100,000 items with a net explosive weight of over 53,000 pounds.

Although not designed nor purchased for this scenario, the ARTS proved its flexibility and worth by performing this bit of peacetime engineering magic.

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A portion of the collapsed ceiling in a munitions storage structure at Camp Darby, Italy. (Photos courtesy 31st CES)